Amendments to the Specification:

Please replace the paragraphs which begin at page 3, lines 15 through 31 and continue through page 4, lines 1 through 17 with the following rewritten paragraphs:

--[FIG. 1 is a perspective view of a possible gradient coil set according to the invention.

FIG. 2a is a table showing on-axis linearity.

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FIG. 2b is a table showing off-axis uniformity.

FIG. 3 is a table showing on-axis field behavior.

FIG. 4 is a table showing on-axis field behavior.]

FIG. [5] 2 is a gradient pattern.

FIG. [6] 3 is a gradient pattern.

FIG. [7a] 4a is a gradient pattern.

FIG. [7b] 4b is a gradient pattern.

[FIG. 8 is a table showing on-axis field behavior.]

FIG. [9] 5 is a gradient pattern.

FIG. [10] 6 is a gradient pattern.

FIG. [11] 7 is a gradient pattern.

FIG. [12] 8 is a gradient pattern.

FIG. [13] 9 is a gradient pattern.

[FIG. 14 is a table showing on-axis behavior.]

FIG. [15] 10 is a gradient pattern.

FIG. [16a] 11a is a gradient pattern.

FIG. [16b] 11b is a gradient pattern.

FIG. [17a] 12a is a gradient pattern.

FIG. [17b] 12b is a gradient pattern.

FIG. [18] 13 is a perspective view of a possible gradient

coil set according to the invention with shielded biplanar coils.

A1 cont

FIG. [19] 14 is a perspective view of a possible gradient coil set according to the invention with unshielded biplanar coils.

FIG. [20] 15 is a perspective view of a possible gradient coil set according to the invention with shielded biplanar coils and incorporating radio frequency coils.

FIG. [21] 16 is a perspective view of a possible gradient coil set according to the invention with unshielded biplanar coils and incorporating radio frequency coils.

FIG. [22] 17 is a perspective view of a possible gradient coil set according to the invention in an array configuration.

FIG. [23] 18 is a perspective view of a possible gradient coil set according to the invention incorporating knee and upper thigh frequency coils.

FIG. [24] 19 is a perspective view of a possible gradient coil set according to the invention incorporating knee and foot radio frequency coils.--

Please replace the paragraph which appears at page 21, lines 4 through 12 with the following rewritten paragraph:

A2

--The application of the Lagrange minimization technique to the set of constraints of the Table 1, generates a continuous current distribution for primary coil of the Transverse Non-Shielded Y biplanar coil. With the assist of the stream function technique, the continuous current densities for the two coils can be approximated by a 10 discrete loops with a common current of 287.6 Amps. Table 2 illustrates all the vital characteristics needed for the engineering and manufacturing phase of such a

gradient coil. [In addition figure 2 shows the on axis field behavior (on-axis linearity is represented by Figure 2a, off-axis uniformity is represented by Figure 2b)of the coil as it has been evaluated by applying the Biot-Savart law to the coil's discrete current pattern.]

Please replace the paragraph which begins at page 22, lines 12 through 15 and continues through page 23, lines 1 through 4 with the following rewritten paragraph:

A3

--The application of the Lagrange minimization technique to the set of constraints of the Table 3, generates a continuous current distribution for primary coil of the Transverse Non-Shielded X biplanar coil. With the assist of the stream function technique, the continuous current densities for the two coils can be approximated by a 10 discrete loops with a common current of 282.9 Amps). Table 4 illustrates all the vital characteristics needed for the engineering and manufacturing phase of such a gradient coil. [In addition figure 3 shows the on axis field behavior of the coil as it has been evaluated by applying the Biot-Savart law to the coil's discrete current pattern.]--

Please replace the paragraph which appears at page 24, lines 6 through 13 with the following rewritten paragraph:

A4

--The application of the Lagrange minimization technique to the set of constraints of the Table 5, generates a continuous current distribution for primary coil of the Axial Non-Shielded Z biplanar coil. With the assist of the stream function technique, the continuous current densities for the two coils can be

A4 Cont

approximated by a 10 discrete loops with a common current of 298.15 Amps. Table 6 illustrates all the vital characteristics needed for the engineering and manufacturing phase of such a gradient coil. [In addition figure 4 shows the on axis field behavior of the coil as it has been evaluated by applying the Biot-Savart law to the coil's discrete current pattern.]--

Please replace the paragraph which begins at page 25, lines 12 through 14 and continues through page 26, lines 1 through 9 with the following rewritten paragraph:

A5

--The application of the Lagrange minimization technique to the set of constraints of the Table 7, generates a continuous current distribution for primary coil of the Transverse Shielded Y biplanar coil. With the assist of the stream function technique, the continuous current densities for the primary coil can be approximated by a 15 discrete loops with a common current of 425.85 Amps(figure [5] <u>2</u>). **For a shielded Y biplanar gradient coil with parabolic returns, the current pattern for the primary coil is shown in Figure [6] <u>3</u>.** while for the secondary coil its continuous current density can be approximated by 10 loops (figure [7b] <u>4a</u>)with the same constant current as the primary coils. **For a shielded Y biplanar gradient coil with parabolic returns, the current pattern for the secondary coil is shown in Figure [7b] <u>4b</u>.** Table 8 illustrates all the vital characteristics needed for the engineering and manufacturing phase of such a gradient coil. [In addition figure 8 shows the on axis field behavior of the coil as it has been evaluated by applying the Biot-Savart law to the coil's discrete current pattern.]--

Please replace the paragraph which appears at page 27, lines 13 through 20 with the following rewritten paragraph:

A6

--The application of the Lagrange minimization technique to the set of constraints of the Table , generates a continuous current distribution for primary coil of the Transverse Shielded X biplanar coil. With the assist of the stream function technique, the continuous current density for the primary coil can be approximated by a 16 discrete loops with a common current of 339.2 Amps(figure [9] 5). The continuous current density of the shielding coil can be also approximated by a set of 11 discrete loops carrying the same current as the primary coil(figure [10] 6). Table 10 illustrates all the vital characteristics needed for the engineering and manufacturing phase of such a gradient coil.--

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Please replace the paragraph which appears at page 29, lines 6 through 12 with the following rewritten paragraph:

A7

--The application of the Lagrange minimization technique to the set of constraints of the Table 11, generates a continuous current distribution for primary coil of the Axial Shielded Z biplanar coil. With the assist of the stream function technique, the continuous current densities for the primary coil can be approximated by 16 discrete loops with a common current of 420.9 Amps(figure [11] 7). the continuous current density for the shielding coil can be approximated by 12 discrete loops (figure [12] 8) Table 12 illustrates all the vital characteristics needed for the engineering and manufacturing phase of such a gradient coil. --

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Please replace the paragraph which appears at page 31, lines 3 through 10 with the following rewritten paragraph:

A8

--The application of the Lagrange minimization technique to the set of constraints of the Table 13, generates a continuous current distribution for primary coil of the Transverse Non-Shielded Y uniplanar coil. With the assist of the stream function technique, the continuous current densities for the coil can be approximated by a 10 discrete loops with a common current of 411.2 Amps (figure [13] 9). Table 14 illustrates all the vital characteristics needed for the engineering and manufacturing phase of such a gradient coil. [In addition figure 14 shows the on axis field behavior of the coil as it has been evaluated by applying the Biot-Savart law to the coil's discrete current pattern.]--

Please replace the paragraph which appears at page 32, lines 13 through 18 with the following rewritten paragraph:

A9

--The application of the Lagrange minimization technique to the set of constraints of the Table 15 generates a continuous current distribution for primary coil of the Axial Non-Shielded Z uniplanar coil. With the assist of the stream function technique, the continuous current densities for the two coils can be approximated by a 10 discrete loops with a common current of 316.1 Amps(figure [15] 10). Table 16 illustrates all the vital characteristics needed for the engineering and manufacturing phase of such a gradient coil.--

Please replace the paragraph which appears at page 34, lines

6 through 14 with the following rewritten paragraph:

--The application of the Lagrange minimization technique to the set of constraints of the Table 17 generates a continuous current distribution for primary coil of the Transverse Shielded Y biplanar coil. With the assist of the stream function technique, the continuous current densities for the primary coil can be approximated by a 16 discrete loops with a common current of 324.17 Amps(figure [16a] 11a), while for the secondary coil its continuous current density can be approximated by 8 loops (figure [16b] 11b)with the same constant current as the primary coils. Table 18 illustrates all the vital characteristics needed for the engineering and manufacturing phase of such a gradient coil. [In addition figure 16c shows the on axis field behavior of the coil as it has been evaluated by applying the Biot-Savart law to the coil's discrete current pattern.]--

A10

Please replace the paragraph which appears at page 36, lines 3 through 9 with the following rewritten paragraph:

--The application of the Lagrange minimization technique to the set of constraints of the Table 19, generates a continuous current distribution for primary coil of the Axial Shielded Z biplanar coil. With the assist of the stream function technique, the continuous current densities for the primary coil can be approximated by 21 discrete loops with a common current of 385.71 Amps(figure [17a] 12a). The continuous current density for the shielding coil can be approximated by 13 discrete loops (figure [17b] 12b) Table 20 illustrates all the vital characteristics needed for the engineering and manufacturing phase of such a

A11

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gradient coil. -

Please replace the paragraphs which begin at page 39, lines 23 through 31 and continue through page 40, lines 1 through 6 with the following rewritten paragraphs:

--Referring to FIG. [18] 13, a gradient coil set 30 includes self-shielded gradient coils 32, 34, 36 and a RF head coil 38

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Referring to FIG. [19] 14, a gradient coil set 40 includes un-shielded gradient coils 42, 44, 46 and a RF head coil 48.

Referring to FIG. [20] 15, a gradient coil set 50 includes self-shielded gradient coils 52, 54, 56, a RF head coil 58 and a CTL spine coil 59 integrated into the structure of the gradient coil set 50.

Referring to FIG. [21] 16, a gradient coil set 60 includes un-shielded gradient coils 62, 64, 66, a RF head coil 68 and a CTL spine coil 69 integrated into the structure of the gradient coil set 60.

Referring to FIG. [22] 17, a gradient coil set 70 includes Z-gradient uniplanar coils 72, 74 and X-Y biplanar gradient coils 76, 78 in a phased array configuration. A head RF coil 79 may be included.

Referring to FIG. [23] 18, an open Z-axis face coil set 90 includes a knee and upper thigh RF coil 92 integrated therewith.

Referring to FIG. [24] 19, an open Z-axis face coil set 100 includes a knee and foot RF coil 102 integrated therewith.--